

Notice of Allowability	Application No.	Applicant(s)
	10/763,207	NINOMIYA, TERUHISA
	Examiner	Art Unit
	Marisol Figueroa	2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to response filed on 1/31/2007.

2. The allowed claim(s) is/are 1,5,6 and 8-12.

3. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some* c) None of the:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. _____.

3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

(a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) hereto or 2) to Paper No./Mail Date _____.

(b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of
Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	5. <input type="checkbox"/> Notice of Informal Patent Application
2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____.
3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.	7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment
4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material	8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance
	9. <input type="checkbox"/> Other _____.

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Aaron Walker on 4/10/2007.
3. The application has been amended as follows:

1. (Currently Amended) An apparatus for a wireless base station for use in a wireless local area network (LAN) sharing one frequency channel, said apparatus being adapted to communicate with a plurality of wireless terminals in a plurality of sectors, said apparatus comprising:

a communication control unit, and
a plurality of transceivers associated with said sectors, respectively, said transceivers having respective directive antennas associated with said respective sectors, wherein,

during a first period of time, said communication control unit causes all of said transceivers in all of said sectors to transmit and receive RF signals at said frequency channel to and from said plurality of wireless terminals, determines locations of said wireless terminals in the sectors, in accordance with identification codes of said wireless terminals and with identifications of said transceivers which receive said identification codes, and stores, in a location management table, information indicating which wireless terminals are located in each sector,

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during a second period of time subsequent to said first period of time, said communication control unit enables one or more of said plurality of transceivers that are associated with respective one or more of said plurality of sectors that are not adjacent to each other, to transmit and receive RF signals at said frequency channel to and from wireless terminals, and said communication control unit disables remaining one or more transceivers other than said enabled one or more transceivers, from transmission to wireless terminals, and

during a third period of time subsequent to said second period of time, said communication control unit enables further one or more of said plurality of transceivers that are associated with respective further one or more of said plurality of sectors that are not adjacent to each other, to transmit and receive RF signals at said frequency channel to and from wireless terminals, said further one or more transceivers being disabled in said second period of time from transmitting, and said communication control unit disables further remaining one or more transceivers other than said enabled further one or more transceivers, from transmission to wireless terminals, wherein

time periods associated with said second period of time and time periods associated with said third period of time are sequentially and alternately executed,

a predetermined length of time before the change from a time period associated with said second period of time to a time period associated with said third period of time, said transceiver which is enabled to transmit and receive RF signals starts detection of an RF signal transmitted by a wireless terminal located in a corresponding sector, and broadcasts a packet indicative of disabling transmission between said transceiver and wireless terminals in said corresponding sector during said third period of time and indicative of a length of said third period of time to wireless terminals in said corresponding sector, during which said transceiver does not receive an RF signal,

wherein said transceiver broadcasts said packet if in response to said transceiver not detects detecting no a transmitted RF signal, and wherein, if in response to said transceiver detects detecting a transmitted RF signal, then said transceiver broadcasts said packet after completion of transmission of the transmitted RF signal,

a predetermined length of time before the change from a time period associated with said third period of time to a time period associated with said second period of time, said transceiver which is enabled to transmit and receive RF signals starts detection of an RF signal transmitted by a wireless terminal located in a corresponding sector, and broadcasts a packet indicative of disabling transmission between said transceiver and wireless terminals in said corresponding sector during said second period of time and indicative of a length of said second period of time to wireless terminals in said corresponding sector, during which said transceiver does not receive an RF signal,

wherein said transceiver broadcasts said packet if in response to said transceiver not detects detecting no a transmitted RF signal, and wherein, if in response to said transceiver detects detecting a transmitted RF signal, then said transceiver broadcasts said packet after completion of transmission of the transmitted RF signal, and

the communication control unit determines whether time periods associated with said second period of time and time periods associated with said third period of time have been sequentially and alternately executed a predetermined number of times and executes a time period associated with said first period of time based on said determination.

9. (Currently Amended) A computer readable medium encoded with a computer program for an apparatus for a wireless base station for a wireless LAN sharing one frequency channel, said

apparatus being adapted to communicate with a plurality of wireless terminals in a plurality of sectors, said method program being operable to effect:

 during a first period of time, causing all of a plurality of transceivers in all of said sectors to transmit and receive RF signals at said frequency channel to and from said plurality of wireless terminals, determining locations of said wireless terminals in said sectors, in accordance with identification codes of said transceivers which receive said identification codes, and storing, in a location management table, information indicating which wireless terminals are located in each sector,

 during a second period of time subsequent to the first period of time, enabling one or more of said plurality of transceivers that are associated with respective one or more of said plurality of sectors that are not adjacent to each other, to transmit and receive RF signals at said frequency channel to and from wireless terminals, and disabling remaining one or more transceivers other than said enabled one or more transceivers, from transmission to wireless terminals; and

 during a third period of time subsequent to said second period of time, enabling further one or more of said plurality of transceivers that are associated with respective further one or more of said plurality of sectors that are not adjacent to each other, to transmit and receive RF signals at said frequency channel to and from wireless terminals, said further one or more transceivers being disabled in said second period of time from transmission, and disabling further remaining one or more transceivers other than said enabled further one or more transceivers, from transmission to wireless terminals, wherein

 time periods associated with said second period of time and time periods associated with said third period of time are sequentially and alternately executed,

a predetermined length of time before the change from a time period associated with said second period of time to a time period associated with said third period of time, said transceiver which is enabled to transmit and receive RF signals starts detection of an RF signal transmitted by a wireless terminal located in a corresponding sector, and broadcasts a packet indicative of disabling transmission between said transceiver and wireless terminals in said corresponding sector during said third period of time and indicative of a length of said third period of time to wireless terminals in said corresponding sector, during which said transceiver does not receive an RF signal,

wherein said transceiver broadcasts said packet if in response to said transceiver not detects detecting no a transmitted RF signal, and wherein, if in response to said transceiver detects detecting a transmitted RF signal, then said transceiver broadcasts said packet after completion of transmission of the transmitted RF signal,

a predetermined length of time before the change from a time period associated with said third period of time to a time period associated with said second period of time, said transceiver which is enabled to transmit and receive RF signals starts detection of an RF signal transmitted in a corresponding sector, and broadcasts a packet indicative of disabling transmission between said transceiver and wireless terminals in said corresponding sector during said second period of time and indicative of a length of said second period of time to wireless terminals in said corresponding sector, during which said transceiver does not receive an RF signal,

wherein said transceiver broadcasts said packet if in response to said transceiver not detects detecting no a transmitted RF signal, and wherein, if in response to said transceiver detects detecting a transmitted RF signal, then said transceiver broadcasts said packet after completion of transmission of the transmitted RF signal, and

the communication control unit determines whether time periods associated with said second period of time and time periods associated with said third period of time have been sequentially and alternately executed a predetermined number of times and executes a time period associated with said first period of time based on said determination.

10. (Currently Amended) A method for communication in an apparatus for a wireless base station for a wireless LAN sharing one frequency channel, said apparatus being adapted to communicate with a plurality of wireless terminals in a plurality of sectors, said method comprising:

 during a first period of time, causing all of a plurality of transceivers in all of said sectors to transmit and receive RF signals at said frequency channel to and from said plurality of wireless terminals, determining locations of said wireless terminals in said sectors, in accordance with identification codes of said transceivers which receive said identification codes, and storing, in a location management table, information indicating which wireless terminals are located in each sector,

 during a second period of time subsequent to the first period of time, enabling one or more of said plurality of transceivers that are associated with respective one or more of said plurality of sectors that are not adjacent to each other, to transmit and receive RF signals at said frequency channel to and from wireless terminals, and disabling remaining one or more transceivers other than said enabled one or more transceivers, from transmission to wireless terminals; and,

 during a third period of time subsequent to said second period of time, enabling further one or more of said plurality of transceivers that are associated with respective further one or more of said plurality of sectors that are not adjacent to each other, to transmit and receive RF signals at said frequency channel to and from wireless terminals, said further one or more transceivers being disabled in said second period of time from transmission, and disabling further remaining one or

more transceivers other than said enabled further one or more transceivers, from transmission to wireless terminals, wherein

time periods associated with said second period of time and time periods associated with said third period of time are sequentially and alternately executed,

a predetermined length of time before the change from a time period associated with said second period of time to a time period associated with said third period of time, said transceiver which is enabled to transmit and receive RF signals starts detection of an RF signal transmitted by a wireless terminal located in a corresponding sector, and broadcasts a packet indicative of disabling transmission between said transceiver and wireless terminals in said corresponding sector during said third period of time and indicative of a length of said third period of time to wireless terminals in said corresponding sector, during which said transceiver does not receive an RF signal,

wherein said transceiver broadcasts said packet if in response to said transceiver not detects detecting no a transmitted RF signal, and wherein, if in response to said transceiver detects detecting a transmitted RF signal, then said transceiver broadcasts said packet after completion of transmission of the transmitted RF signal,

a predetermined length of time before the change from a time period associated with said third period of time to a time period associated with said second period of time, said transceiver which is enabled to transmit and receive RF signals starts detection of a transmitted RF signal in a corresponding sector, and broadcasts a packet indicative of disabling transmission between said transceiver and wireless terminals in said corresponding sector during said second period of time and indicative of a length of said second period of time to wireless terminals in said corresponding sector, during which said transceiver does not receive an RF signal,

wherein said transceiver broadcasts said packet if in response to said transceiver not detects detecting no a transmitted RF signal, and wherein, if in response to said transceiver detects detecting a transmitted RF signal, then said transceiver broadcasts said packet after completion of transmission of the transmitted RF signal, and

the communication control unit determines whether time periods associated with said second period of time and time periods associated with said third period of time have been sequentially and alternately executed a predetermined number of times and executes a time period associated with said first period of time based on said determination.

Reasons for Allowance

4. Claims 1, 5, 6, 8-12 (*renumbered as 1-8, accordingly*) are allowed.
5. The following is an examiner's statement of reasons for allowance: Applicant's arguments filed on 1/31/2007 are persuasive.

Claims 1, and 8-12 are allowed because the closest prior art, Padovani et al. (US 2004/0196800 A1) in views of Yamamoto et al. (US 2003/0109265 A1) and Yli-Kotila et al. (US 5,539,925), either singularly or in combination, fail to anticipate or render obvious the features of broadcasting a packet to wireless terminals located in a corresponding sector indicative of disabling transmission between said transceiver and wireless terminals during a period of time and indicative of a length of said period of time, furthermore, wherein the control unit determines whether time periods associated with a second period of time and time periods associated with second period of times have been sequentially and alternately executed a predetermined number of times and executes a time period associated with a first period of time based on said determination.

Claims 5-6 are allowed as being dependent upon independent claims that have been allowed.

6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Prior Art of Record

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- (a) SMITH et al. (US 5,021,801) – Antenna switching system.
- (b) GARDNER et al. (US 6,188,903 B1) – Method and apparatus for frequency reuse in cellular communication systems.
- (c) GILBERT et al. (US 5,999,818) – Frequency re-used and time-shared cellular communication system having multiple radio communication systems.
- (d) SHELLHAMMER et al. (US 7,039,358 B1) – Coexistence techniques in wireless networks.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marisol Figueroa whose telephone number is (571) 272-7840. The examiner can normally be reached on Monday Thru Friday 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester G. Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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